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Improvising Policy Governance in Welfare Development: Case Study of Smart City in Madiun City, Indonesia

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Abstract

A smart city is a comprehensive urban planning model that seeks to address challenges from multiple perspectives and mitigate risks to the well-being of the community. It is evident that the concept of welfare has implications for the happiness of the community. A happy community is an indicator of the success of the local government in achieving its development goals. The concept of happiness is not solely contingent upon material success; rather, it is also dependent upon the interpretation of the process and outcomes of development as beneficial for all stakeholders, including the state, government, society, and external policy makers. This study employs a qualitative method with a case study approach. The findings of this study indicate that the practice of a smart city has been implemented in various forms and has had an impact on the community in Madiun City. This progress is evidenced by advancements in a multitude of development sectors, including social, economic, environmental, technological, and other forms of development. The findings of this study indicate that the government of Madiun City has successfully implemented a smart city initiative, resulting in a range of positive impacts on the community. It is important to note, however, that strengthening leadership and governance is a crucial step, given the reality that changes in leadership often result in shifts in policy direction. Furthermore, establishing a comprehensive legal framework to oversee the smart city program is essential, given that, currently, only a mayor's regulation exists in Madiun City, serving as the sole basis for policy.

Keywords:

welfare; policy; smart city; Madiun City

Introduction

The concept of a "Smart City" represents a potential avenue for addressing social challenges in Madiun City. A smart city is an instrument for accelerating economic growth, social welfare, and environmental management (Lee et al., 2023; Kumar & Dahiya, 2023). This assumption is based on the existence of a comprehensive strategy for urban management that not only emphasizes the novelty of technology and information, or what has been termed "smartification," but also patterns of orientation to the humanism of the community in the process of urban governance itself (Castelli, 2018; Makushkin et al., 2016; Rijshouwer et al., 2022; Trencher, 2019). In this context, the development of smart cities is not only a precursor to the fourth industrial revolution but also a catalyst for the advent of a fifth industrial revolution, or society 5.0. Similarly, in Madiun City, the implementation of smart city practices has resulted in a multitude of government innovations, enhanced city branding, accelerated economic growth,

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improved quality of life for citizens (including the fulfillment of basic services, education, and health), strengthened social communities, and enhanced environmental sustainability. This indicates that the concept of a "smart city" in Madiun City is not merely an application of technology; rather, it is a multifaceted approach that seeks to address the challenges faced by citizens through the intervention of the government.

The concept of the Smart City has yielded a number of positive outcomes; however, despite these advances, numerous challenges persist, particularly at the subjective and micro levels (Morozov & Bria, 2018). The various obstacles faced by smart cities in addressing urban issues, particularly the assertion that smart cities have become a panacea for all citizens, are exemplified by the findings of a study conducted by Rijshouwer et al. (2022). This study reveals the shortcomings of smart cities in addressing individual inconvenience and the inability to resolve social problems. Furthermore, the lack of public discourse surrounding the implementation of smart city policies increases the risk of adverse outcomes when these policies are enacted without a clear understanding of the preferences and needs of individuals within the city (Couldry and Mejias, 2019; Diakopoulos, 2014; Kitchin, 2015; Vanolo, 2014). This implies that smart cities must not only facilitate community prosperity but also sustain the happiness of their inhabitants. Based on reports from Madiun City itself, the local government has designed and achieved six indicators, including smart economy, smart branding, smart society, smart governance, smart living, and smart environment. However, the micro impact has not been clearly measured in practice, necessitating further evaluation studies related to the impact of smart city implementation on more detailed aspects.

This article seeks to examine the implementation and impact of the smart city in Madiun City. This study employs a micro perspective to examine the implementation and impact of smart cities, focusing on the welfare aspects provided by the government in Madiun City. It considers not only the economic aspects of smart cities but also the ways in which they promote justice within communities and examines projections of future impacts. To date, studies of smart cities have focused on a number of key areas, including the utilisation and delivery of technology (including system development), smart city policies from the perspective of the process and government, and the impact of smart city-based services from the standpoint of the service provider. Meanwhile, studies of the impact of smart cities on subjective well-being remain scarce, particularly in terms of satisfaction, pleasure in life, job satisfaction, relationships, health, recreation, and meaning and purpose in life (Diener & Ryan, 2009; Horwood & Anglim, 2019). This indicates a need for a study on the impact of the smart city on subjective happiness in the community of Madiun City. It is imperative to conduct a study on the actual users of the Madiun

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City smart city-based policies and services, as they are the primary stakeholders who will experience the direct impact of these initiatives. This will facilitate a comprehensive discourse analysis between the users and the policies/services.

This research primarily examines the happiness of residents in Madiun City, with a particular focus on the impact of smart cities on user satisfaction. The primary focus of this argument is the enhancement of the impact of policies and services that affect the well-being of residents in Madiun City, which is a macro-level phenomenon. This, in turn, contributes to satisfaction and happiness. However, in this context, policy is closely related to the political legitimacy of the regional head. Therefore, research is not sufficient to solely rely on data from those who support the policy in question; it must also engage with those who oppose or do not support it. This involvement is conducted with the objective of producing an objective analysis of policies related to the crucial question of whether a smart city can also benefit and have an impact on city residents who are opposed to policymakers, particularly in terms of happiness. It is important to consider that city residents who are opposed are also included under the auspices of the regional head in Madiun City.

Methods

The subject of this research is the implementation of the smart city policy in Madiun City. The primary focus of this study is to examine the impact of the smart city policy on subjective happiness within the Madiun City community. The fact that local government macro data used for internal evaluation often fails to capture anomalies in the policy evaluation process provides the rationale for focusing the research on the impact of subjective happiness. In this instance, the local government's internal evaluation macro data is employed solely as supplementary information. The research design employed a qualitative method with a case study approach. The researchers postulated that these methods and approaches were likely to yield cases or findings in depth that could not be obtained through other methods, such as quantitative surveys.

The data sources employed in this research comprise secondary data (including evaluation reports), interview results, as well as documentation/archives and the research location area. Data collection activities, including the documentation of relevant materials and the transcription of interviews, were conducted in the local government area of Madiun City. The primary source of information was technical officials in the local government secretariat in Madiun City. The data analysis technique employed in this study is the interactive analysis technique of the Miles and Huberman model, which is applied to the results of field acquisition (Houghton et al., 2015). The data results pertaining to the concept of a "smart city," along with

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the interview transcripts of relevant officials and implementers, the documentation of smart city application practices, and the various acquisitions made during the field study, will be reduced according to the requirements of the research report. The results of this reduction will then be subjected to thorough analysis and integration with one another in order to obtain a synthesis of the study, which will serve as the conclusion of the research.

Results and Discussion

Smart City Achievement Progress in Madiun City

The local government authority implemented a smart city initiative in Madiun City with the objective of enhancing the accessibility of essential services (such as education and healthcare), improving the quality of urban planning, fostering economic prosperity, and streamlining government administration. This initiative was undertaken in response to the prevailing conditions in Madiun City, which were characterised by a multitude of challenges that had a detrimental impact on the well-being of individuals (Book 2 of the Madiun City Smart City Masterplan 2019-2024, 2019). The city's challenges include the provision of non-standard and conventional services, a shortage of human resources and sectoral rivalries, policy conflicts, and poor city governance. These issues have a detrimental impact on the public and society as a whole, highlighting the need for a comprehensive restructuring and management approach, such as the smart city initiative, to address the underlying problems in Madiun City.

Figure 1.

Waste Powered Kitchen Laboratory

Source: Observation (2023)

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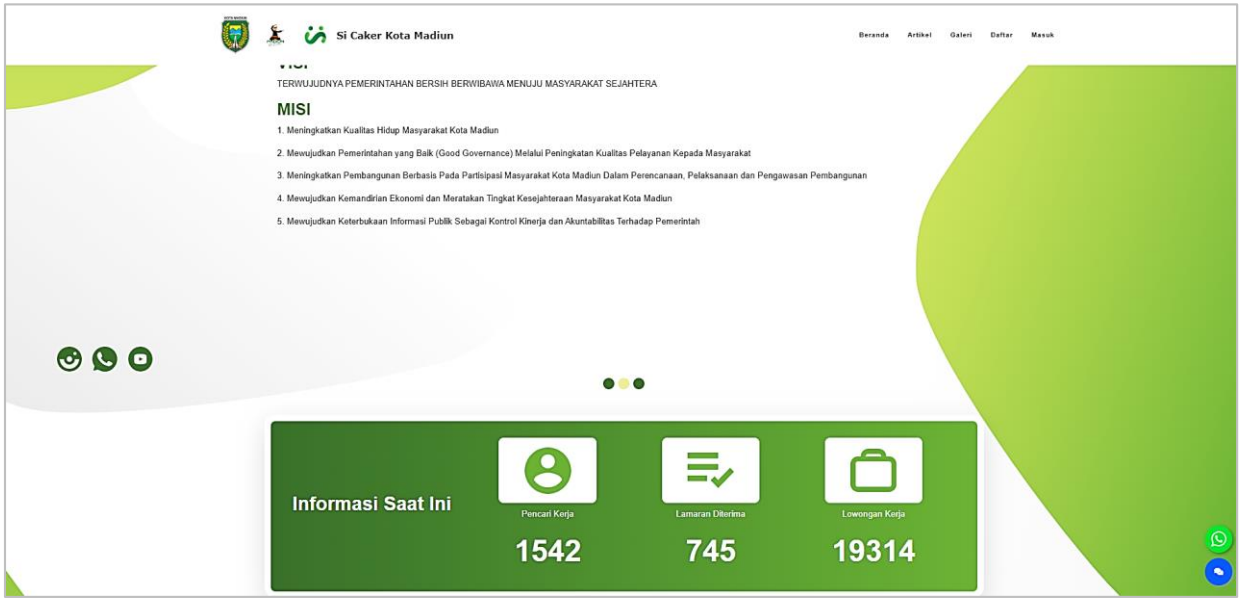
The provision of infrastructure and smart technologies, including sustainable waste management, clean water (sanitation), energy, and environmental protection, plays a significant role in enhancing the quality of life of citizens in Madiun City. This is of particular importance to both citizens and the government. The constraints faced by both citizens and the government in the management of such infrastructure are pervasive, encompassing both material resources (e.g., the impact of incurred losses) and human resources (e.g., a shortage of personnel or expertise). In Madiun City, several areas have demonstrated effective management of water flows that were previously predicted to cause overflow and flooding issues. Furthermore, the city of Madiun has successfully implemented a plastic waste processing system that produces heat energy for household use in three villages, with approximately 2,000 households. Based on field observations, this program is a priority for long-term development in meeting the energy needs of gas substitutes and household economic savings.

The management of street lighting and landscaping infrastructure in Madiun City has also been conducted through an IoT system that can be controlled from any location provided that it is connected to the internet network. In light of the aforementioned factors, the implementation of smart infrastructure and technology in Madiun City is now imperative, as evidenced by the findings of prior studies that have highlighted its benefits, including predictive and precise infrastructure maintenance, cost savings in development, enhanced infrastructure reliability, durability, and security, as well as the reduction of emissions from the infrastructure itself (Annaswamy et al., 2016; Fang et al., 2012; Ogie et al., 2017).

Figure 2.

Si Caker Application Madiun Smart City



Source. https://sicaker.madiunkota.go.id/

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The smart city initiative in Madiun City has facilitated economic growth and inclusive employment opportunities for individuals from all socioeconomic backgrounds. This outcome has been achieved through the integration of data pertaining to the number of job vacancies, the number of individuals seeking employment, and the number of applications received in response to these openings. Additionally, the application contains a list of private sector entities that collaborate with the municipal government, legal documents pertaining to employment, performance standards for prospective job applicants, and other articles that elucidate strategies for entering the workforce. The information is compiled into an application that is sufficiently user-friendly to facilitate the formulation of a comprehensive employment plan by job seekers. Such a strategy is particularly beneficial in the context of poverty alleviation, unemployment reduction, enhanced labor productivity, and the geographical suitability of employment opportunities (Hall & Schulhofer-Wohl, 2018; Marinescu & Rathelot, 2018).

In the context of social services, especially security protection for the public, the city of Madiun deploys a road security monitoring system comprising camera installations at various locations of high pedestrian traffic and potential criminal activity. In addition to monitoring traffic density, the security camera system is useful for deterring criminal activity on highways. In accordance with the PEMKOT MADIUN CCTV application, 78 cameras have been installed in Madiun City at locations including intersections and other areas of high pedestrian traffic. In this regard, the advantages of camera technology are palpable for road users, offering a valuable opportunity to prioritize public safety. Indeed, this has become a key objective of government programs in numerous countries (Higgins et al., 2011; Mettel et al., 2019).

The Madiun City-led initiative to develop a smart city is designed to facilitate social engagement through participation and inclusive community development, with the objective of enhancing citizen happiness. Madiun City, which is not yet a fully-fledged metropolitan area, still exhibits a strong social structure and a tendency for its residents to adhere to traditional social patterns and communal ties. This is evident in the continued use of collective and communal forms of social organisation, including in the patterns of relations with the government. In practice, this has an impact on the level of public participation in electronic-based channels and the opening of application channels by the city government, including INLIS, online licensing, service desk, Dashboard Kota Madiun, PROUMKM, and M. The SKP, KLIKWA, MANEKIN, AWAK SIGAP, PECEL TUMPANG, PECEL SIPDOK, TAKSIAH, BROKOHAN, JEBOL KIPER Transformation, SPIP, and the SPIP itself are all part of the larger system of electronic-based channels and application channels opened by the city government.

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In order to effectively manage smart cities, the Madiun City Government must ensure that there is a comprehensive and reliable internet infrastructure in place, including broadband connectivity and sufficient telecommunications infrastructure. This is a fundamental requirement for the development of smart technology and the fulfillment of community welfare in Madiun City. This stipulation is not solely intended for ongoing initiatives; it is also designed to facilitate public involvement through the utilization of accessible application channels. This internet access serves as the foundation for a smart city, wherein technology is integrated into all aspects of urban life to drive diverse developments, particularly in urban economic development (Caragliu & Del Bo, 2019; Rao & Prasad, 2018). The encouragement of urban economic development is not only concerned with the improvement of the economy and welfare of the people, but also with the reduction of economic disparities in Madiun City through the development of human resources. The extensive provision of internet access and telecommunications infrastructure is optimized to enhance capabilities in all sectors, including education, health, business (especially MSMEs), and other sectors. This enables prompt access to information or solutions when problems arise in Madiun City.

Smart City Achievement Progress in Madiun City

The implementation of smart cities in terms of public policies has provided various positive experiences in various regions, and this has become a topic of discussion among previous researchers. The discourse on smart cities has produced a number of key themes. These include the production of various innovations, improvements in planning and governance, and the importance of government collaboration. This is evidenced by the work of Camero and Alba (2019), Caragliu and Del Bo (2019), Giffinger (2021), Heaton and Parlikad (2019), and Nilssen (2019).

Another key theme is the application of technology to improve the environment and green land governance, with the aim of achieving sustainable development. This is a central argument put forward by Gath-Morad et al. (2019; Wang et al., 2021), (2017; Lim et al., 2019; Wang et al., 2021), and smart cities directly benefit the public socially and economically in the form of fostering positive community culture and entrepreneurship (Kummitha & Crutzen, 2017; Nilssen, 2019; van den Buuse & Kolk, 2019; Zhao et al., 2021). These positive results have been reflected in the practices of Madiun City through the formulation of development programs designed for the public and the community (including the business community). This is supported by the argument of Appio et al. (2019), which asserts that technology in the smart city framework is

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oriented towards innovation, the impact of public services, as well as environmental improvements and the quality of life of urban communities.

As evidenced by the findings of Camero & Alba (2019), Caragliu & Del Bo (2019), Giffinger (2021), Heaton & Parlikad (2019), and Nilssen (2019), the concept of smart cities has emerged as a crucial avenue for addressing urban challenges. These studies illustrate that the implementation of smart city principles is a vital strategy for governments to effectively tackle pressing issues such as infrastructure development, environmental concerns, population growth, land management, and more. As projected by the World Cities Report (2022), by 2050, 68% of the global population will reside in urban areas, which will have a significant impact on the increasing density of urban areas. The increased density will necessitate a more sophisticated form of organization to address the novel challenges and issues that accompany urban population growth.

The statistical average growth rate in Madiun City has reached 5% per year (BPS Madiun City, 2024). The government is thus compelled to address this phenomenon, and in doing so, has developed a strategy to mitigate the threat of overcrowding in the city. Previously existing problems, including deficiencies in basic services (such as education and health), inadequate administrative services, and insufficient connectivity between the government and its citizens, are being addressed through the Quick Win Program strategy (which is part of the Smart City Madiun initiative). This strategy considers the impact of these deficiencies, particularly in terms of social changes in society, shifts in urban planning, and changes in the city's economy. One of the programs is dedicated to poverty alleviation, with a particular focus on providing long-term assistance to students. Additionally, the city government is distributing laptops to students with the aim of facilitating human resource development. The most notable accomplishment is that Madiun City has received over 300 awards during the Smart City Program.

In addition to providing basic services, the government in Madiun City, which has implemented sustainable urban governance, has also addressed previously existing environmental issues, including waste management and waterway contamination. Flooding, which frequently occurs during the rainy season, has become a significant issue in certain areas of Madiun City, resulting in considerable economic losses for the community. However, these challenges have been effectively addressed through the normalization of rivers and the strategic management of waterways. Furthermore, the issue of waste, which is frequently a challenge in densely populated areas, has been effectively addressed through the implementation of technological solutions by the municipal government. The innovation in question is a process of converting waste into methane gas, which is then distributed to villages and utilized as fuel on a

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household scale. These endeavors align with the notion that intelligent cities leverage technology to enhance environmental quality and green land governance, thereby facilitating sustainable development (Gath-Morad et al., 2017; Lim et al., 2019; Wang et al., 2021). In other words, support for sustainable development has been implemented in the form of a quick-win smart environment, reflecting the government's responsibility to the environment.

Conclusion

The concept of a "smart city" has been operational in Madiun City for approximately five years. The objective is to optimize development from various perspectives, including social, economic, and environmental. The objective of the smart city is to facilitate innovation not only in terms of technology but also in regard to the manner in which the community engages with the technology, ensuring that it is aligned with the desired outcomes, appropriate, and targeted. The government has received numerous accolades for its role in developing the smart city, which has served as a source of motivation for continued improvement. However, two considerations must be made with regard to the development of the smart city. The first is the issue of leadership, which plays a pivotal role in accelerating development through the smart city. Given the likelihood of policy changes with a change in leadership, it is essential to have a stable and effective leadership structure in place. The second consideration is the need for a comprehensive legal framework that provides guidance and oversight for the smart city policies. Currently, the ongoing smart city program is guided by a mayor's regulation, which may not be sufficient to address the complex and evolving needs of a smart city.

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